



Letter to the Editor

An alternative model of a forensic autopsy service

New Brunswick is an Eastern Canadian province with a population of approximately 720,000¹ and a low homicide rate (1.6/100,000 in 2009).² Like some other jurisdictions in North America, death investigations operate on a Coroner system, but there is no formal "Forensic Science Institute" or a dedicated Coroners facility-based morgue. The actual practice of forensic pathology is hospital based where health care is provided by single payer, government-funded universal medical coverage system (Medicare). These factors provide New Brunswick with distinct advantages allowing forensic services to "piggy-back" on services available to the living.

To best understand these advantages it is necessary to first have some insight into the Coroner structure and the types of autopsies pathologists perform in New Brunswick.

1. The Coroner structure and types of autopsies

The Chief Coroner is appointed by the Provincial Minister in charge of Public Safety. Under the Coroners Act,³ the Chief Coroner has jurisdiction over all other coroners. The organizational chart has local coroners reporting to Regional Coroners who in turn report to the Chief Coroner. This structure provides harmonization and accountability within the New Brunswick forensic system, and prevents duplication of services.

1.1. Types of autopsies

There are two types of coronial autopsies, Type I and Type II. Both are performed in hospital morgues as there are no dedicated forensic mortuaries.

- Type I autopsies are autopsies of non-suspicious deaths that may or may not have occurred in hospital. These are referred to the coroner because the treating physician is uncertain about the cause of death or the family physician is reluctant to certify a cause of death. The coroner can request that Type I autopsies be performed by any one of the 30+ anatomic pathologists in the province. They are usually performed in the hospital wherever the pathologist is located.
- Type II autopsies are all other suspicious or criminal deaths and cases with a high probability of criminal charges being laid against a particular party e.g. victims of motor vehicle accidents. These cases are referred to the Saint John Regional Hospital where there is a staff of 3 part-time forensic pathologists who are on call 24 h a day, seven days a week.

2. Advantages of the system

2.1. The medicare advantage

Medicare in New Brunswick is administered by the provincial government through Regional Health Authorities, where eight regions have recently been merged into two. Most deceased expire in, and are likely to be autopsied in their own health region where, because of Medicare, they are also likely to have a health record. Medical records are stored in hospitals and these records are available for inspection by authorized government employees (the autopsy pathologist), without the need for additional bureaucratic processes. Therefore, the pathologist has access to a vast database of prior clinical contacts, radiology and laboratory results which are required for proper correlation with autopsy findings.

2.2. The hospital advantage

Performing autopsies within the hospital morgue allows ready access to post-mortem radiology investigations and routine blood chemistry analyses. In larger centers with a full suite of radiology tests, this means vital access to CT Scans and MRI studies. Radiology support and interpretation is especially useful for special autopsy procedures (vertebral artery angiograms for instance) when the opinion of a qualified radiologist is highly desirable. Most radiographs are undertaken by qualified radiographers and any one of several radiologists is available to provide rapid interpretation. In fact several studies confirm that when there is adequate radiology support, utilization rates increase.

2.3. The location advantage

Saint John provides the following distinct advantages as the center for New Brunswick's forensic ("Type II") cases:

- Located within 5 h drive of the furthest communities in the province.
- Located within 90 min of the three largest population centers, major airports, major highways and railways and a nuclear power station.
- Located within an hour's drive of a forensic dentist and a forensic anthropologist.
- Base of a forensic neuropathologist.
- Base of the Provincial Toxicologist where all toxicology analyses are performed, unless samples are referred to the federal

police (Royal Canadian Mounted Police) or a private forensic toxicology laboratory. This facilitates immediate feedback and creates opportunities for rapid consultation.

- Base of a molecular geneticist whose assistance can be valuable when investigating unusual cardiac or pediatric deaths.

3. Limitations of the system

A significant handicap is that although information transfer on patients from other parts of the province is facilitated by the coroners, information retrieval has proven less efficient when the deceased was a visitor from another province or country. The other handicap is that occasionally, an additional opinion has had to be obtained from outside New Brunswick when provincial expertise is unavailable e.g. forensic entomology or specialized cardiac pathology and these can delay completion of a report. In spite of these challenges the system operates very well as a loose consortium of experts. Of course since it evolved out of unique circumstances, it can not necessarily be duplicated elsewhere.

4. Discussion

A major strength of the New Brunswick model is the system of accountability. The fact that there is a single Chief Coroner to whom all other coroners' report means that at each level there are mechanisms to rapidly verify, harmonize and correct death investigation practices. This is in contrast to some other jurisdictions, for example a similarly sized jurisdiction with 30+ counties that operates an elected Coroner system. Here there can be 30 separate "Chief Coroners" answerable to the electorate. Again, the impact of having a single health care provider and the lack of a multitude of jurisdictional barriers means it is far easier and quicker to obtain pertinent health records without requiring multiple subpoenas or interlocutors. In a budget conscious environment this facilitates triage between the case that must be autopsied, and the case that only requires a scene sign-out or external examination.

Access to a decedent's records will be further enhanced with the completion of a province-wide electronic patient record⁴ enabling the autopsy pathologist to quickly retrieve the entire medical record of any deceased who has had ante-mortem contact with the provincial health system. The pathologist would not necessarily have to go through the coroner in out-of-region deaths, particularly in Type II cases.

The skeptic may point out that arrangements to provide forensic services are made all the time in various jurisdictions, and in some cases probably work very well. However, with the recent global recession, publicly funded services have seen their budgets severely slashed and death investigation services are among the first group to suffer those cuts. The Chief Coroner or Medical Examiner who presides over an independent budget is faced with increasingly reduced finances and will have to find ways to cut expenses either in terms of personnel or supplies, or both. The

net effect is that the ordering of ancillary tests such as toxicologic analyses necessary to completion of certain cases are kept to the barest minimum, which may not be in the best interest of determining a cause of death. Radiology equipment so crucial to particular cases such as homicides may not properly maintained, or replaced when obsolete. Personnel cuts and a fear for job safety will have a negative effect on staff morale.

5. Conclusion

The New Brunswick model provides a mechanism for forensic services to "piggy-back" on services available to the living; for obvious political and medico-legal reasons these are more resistant to budgetary reductions. The model is well suited to a jurisdiction with a low homicide rate. The structure enables the province to provide an affordable quality Forensic service with appropriate quality control mechanisms but without the financial burden of separate infrastructure and funding for a dedicated autopsy service.

Conflict of interest statement

I hereby declare that there are no financial and personal relationships with other people or organisations that have inappropriately influenced this work.

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